LJ UNIVERSITY

LJ INSTITUTE OF PHARMACY

SEMESTER: II

Subject Name: Pharmaceutical Inorganic Chemistry
Subject Code: BP202TP

Scope: This subject deals with the monographs of inorganic drugs and pharmaceuticals.

Objectives: Upon completion of this course the student should be able to

1. Know the sources of impurities and methods to determine the impurities in inorganic drugs and pharmaceuticals
2. Understand the medicinal and pharmaceutical importance of inorganic compounds

Teaching scheme and examination scheme:

Teaching Scheme				Evaluation Scheme			
				Theory		Practical	
Theory	Tutorial	Practical	Total	External	Internal	External	Internal
4	0	4	8	75	25	35	15

Sr. No.	Course Contents	Hours
1	**Impurities in pharmaceutical substances** **1.1 History of Pharmacopoeia** **1.2 Sources and types of impurities** **1.3 Principle involved in the limit test for Chloride, Sulphate, Iron, Arsenic, Lead and Heavy metals, modified limit test for Chloride and Sulphate.** **General methods of preparation**, assay for the compounds superscripted with **asterisk (*),** properties and medicinal uses of inorganic compounds belonging to the following classes	8
2	**2.1 Acids, Bases and Buffers:** Buffer equations and buffer capacity in general, buffers in pharmaceutical systems, preparation, stability, buffered isotonic solutions, measurements of tonicity, calculations and methods of adjusting isotonicity. **2.2 Major extra and intracellular electrolytes**: Functions of major physiological ions, Electrolytes used in the replacement therapy: Sodium chloride*, Potassium chloride, Calcium gluconate* and Oral Rehydration Salt (ORS), Physiological acid base balance. **2.3 Dental products**: Dentifrices, role of fluoride in the treatment of dental caries, Desensitizing agents, Calcium carbonate, Sodium fluoride, and Zinc eugenol cement.	10
3	**Gastrointestinal agents** **3.1 Acidifiers:** Ammonium chloride* and Dil. HCl **3.2 Antacid:** Ideal properties of antacids, combinations of antacids, Sodium Bicarbonate*, Aluminum hydroxide gel, Magnesium hydroxide mixture **3.3 Cathartics:** Magnesium sulphate, Sodium orthophosphate, Kaolin and Bentonite **3.4 Antimicrobials**: Mechanism, classification, Potassium permanganate, Boric acid, Hydrogen peroxide*, Chlorinated lime*, Iodine and its preparations	10
4	**Miscellaneous compounds** **4.1 Expectorants:** Potassium iodide, Ammonium chloride **4.2 Emetics**: Copper sulphate*, Sodium potassium tartarate **4.3 Haematinics:** Ferrous sulphate*, Ferrous gluconate	10

	4.4 Poison and Antidote: Sodium thiosulphate*, Activated charcoal, Sodium nitrite333 **4.5 Astringents**: Zinc Sulphate, Potash Alum **4.6 Pharmaceutical aids**: (a) Antioxidants and Preservatives (b) Solvents & Vehicles: Purified water, Water for Injection	
5	**5.1 Radiopharmaceuticals**: Radio activity, Measurement of radioactivity, Properties of α, β, γ radiations, Half life, radio isotopes and study of radio isotopes - Sodium iodide I131, Storage conditions, precautions & pharmaceutical application of radioactive substances. **5.2 Complexation:** Werner's theory of Complexation, Ligands and their applications in Pharmacy	07
Total Hours		45

Practical

1. **Limit tests for following ions:**
   Limit test for Chlorides and Sulphates
   Limit test for Iron
   Limit test for Heavy metals
   Limit test for Lead
   Limit test for Arsenic
2. **Identification test:**
   Lead nitrate, Calcium carbonate, Barium chloride, Sodium chloride, Potassium chloride, Sodium bicarbonate, Potassium sulphate, Magnesium hydroxide, Ferrous sulphate, Copper sulphate
3. **Test for purity:**
   Swelling power of Bentonite
   Neutralizing capacity of aluminum hydroxide gel
4. **Preparation of inorganic pharmaceuticals:** Boric acid
5. **Preparation of Complex compound:** Tetramine Copper (II) sulphate

Recommended Books:

1. A.H. Beckett & J.B. Stenlake's, Practical Pharmaceutical Chemistry Vol I & II, Stahlone Press of University of London, 4th edition.
2. A.I. Vogel, Text Book of Quantitative Inorganic analysis
3. P. Gundu Rao, Inorganic Pharmaceutical Chemistry, 3rd Edition
4. M.L Schroff, Inorganic Pharmaceutical Chemistry
5. Bentley and Driver's Textbook of Pharmaceutical Chemistry
6. Anand & Chatwal, Inorganic Pharmaceutical Chemistry
7. Indian Pharmacopoeia